



FAIRFAX COUNTY PARK AUTHORITY

White Gardens

MEP Assessment

**3301 Hawthorne Lane
Falls Church, VA 22042**



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INTRODUCTION

The Fairfax County Park Authority is evaluating White Gardens for the Resident Curator program. White Gardens is located at 3301 Hawthorne Lane in Falls Church. The purpose of this report is to document the existing conditions of the mechanical, electrical, and plumbing systems and to identify deficiencies. Recommendations for corrections are based on the building remaining a residential use.

An Opinion of Probable Cost is provided for correcting the deficiencies. The Opinion of Cost assumes that the party who enters into a contract with the County will perform the role of General Contractor. Costs for hazardous materials testing and remediation are not included in the Opinion of Cost.

MECHANICAL CONDITION ASSESSMENT

Mechanical System

There are two (2) HVAC systems that condition the house.

The first system serves the enclosed patio and consists of a nominal 36 MBH (3 ton) Carrier outdoor air conditioner, located at the far left side of the house near a demolished greenhouse building, that is connected to a Carrier Weathermaker 8000 furnace located in the basement. The outdoor unit appears to be dated 1999 and installed in 2000. The furnace appears to have been installed in 1997. A dial-type mechanical wall-mounted thermostat is located in the enclosed patio. The system was not operational. The ductwork is comprised of galvanized steel mains with flexible duct runouts to the floor-mounted supply diffusers. The return is ducted to a large wall grille in the patio. The last service on the equipment was in October 2004. This HVAC system is past its useful life.





The second system serves the house and consists of a nominal 60 MBH (5 ton) Bryant outdoor air conditioner system connected to a Carrier Weathermaker 8000 furnace in the basement. There is a Honeywell electronic air cleaner located in the return ductwork and a duct-mounted humidifier for this system. A dial-type mechanical wall-mounted thermostat is located in the living room. The furnace is ducted up to floor-mounted supply registers in the dining room, main entry hall, living room, bathroom, kitchen, as well as the three bedrooms and three bathrooms on the second floor. The return is ducted to a large wall grille in the living room. There are no supply registers in the basement. The ductwork is comprised of galvanized steel mains with flexible duct runouts to the floor and wall diffusers. The outdoor unit, furnace, electronic air cleaner, and the humidifier were not working. The equipment was installed October 1994 which puts it way past its useful life.





The laundry area is in the basement. There is a clothes washer, electric clothes dryer, and a plastic utility sink. The clothes dryer vent piping is flexible duct that is routed through the window to a vent on the exterior wall.





Mold and Water Damage

There appears to be mold throughout the house. There are also some areas with severe water damage on the second floor, including at ductwork that is located within the walls.



Hazard Remediation

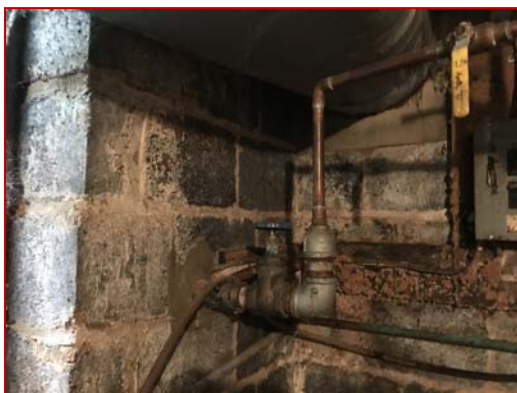
Due to the concerns with the mold, water, and structural damage, SWSG is not comfortable with occupancy of the house without extensive and invasive testing and repairs. An environmental testing company should inspect and take samples for testing throughout the entire house. This includes opening up walls anywhere near and below water damage. Structural repairs are also necessary for the damaged areas. The leaks must be repaired to prevent further damage.

Proposed Mechanical

- Mechanical recommendations are only if the house is structurally repaired, all leaks repaired, and all contaminants throughout remediated.
- Remove and replace HVAC system 1 with a new split system to condition the enclosed patio area.
- Remove and replace HVAC system 2 with a new split system. The humidifier should be replaced. The electronic air filter can be replaced or a high efficiency filter can be provided as an option.
- Remove and replace all existing supply and return grilles.
- Provide an exhaust fan for each bathroom.
- Provide a range hood in the kitchen.
- Replace the flexible clothes dryer exhaust duct.
- Provide a separate dehumidifier just for the basement area.
- Clean the existing ductwork.

Existing Plumbing

The utility-provided domestic water service enters the basement as 1 ¼” pipe and is reduced to ¾” pipe after a gate valve. A ball valve has been added just downstream of the pipe reduction. The domestic water piping is copper with soldered fittings. None of the domestic water piping in the basement is insulated.



The natural gas powered 50 gallon glass-lined domestic water heater is not working and it appears this model was advertised sometime before 1958. The gas meter is located in the basement along with the service regulator that is not vented.



It is unknown if the gas service is still active and turned on. The water service was turned off.

There are at least three hose bibs on the exterior of the house.

The county records show that the house is connected to the utility sewer system and is not septic. Visible sanitary piping in the basement consisted of cast iron and PVC.

The kitchen has a single compartment sink with faucet connected to a Kitchen Aid dishwasher and does not have a garbage disposer.



The first floor toilet room has a water closet and a wall-mounted lavatory.



There are three bathrooms on the second floor. Each bathroom has a wall-mounted lavatory and a water closet. Two bathrooms have standup showers and one has a bathtub.



The property has a frost proof yard hydrant.



Proposed Plumbing

- Plumbing recommendations are only if the house is structurally repaired, all leaks repaired, and all contaminants throughout remediated.
- Replace the water heater.
- Insulate the domestic hot and cold water piping in the basement.
- Provide new faucet and sink for the kitchen and install a garbage disposal.
- Replace the dishwasher.
- Provide new clothes washer and dryer.
- Replace the utility sink and faucet.
- Replace faucets and sinks in all toilet/bath rooms.
- Replace flapper and fill valves in all toilets.
- Replace the shower and bathtub controls and the shower heads.
- Clean gutters and downspouts to verify they are clear.
- Provide splashblocks at all downspouts.
- Make arrangements with the gas utility to relocate the gas meter from the basement to an outdoor location.

ELECTRICAL CONDITION ASSESSMENT

General Electrical

The building is approximately 4,000 square feet and served by a 200A, 120/240V, single phase, electric distribution panel. This yields approximately 10 watts/square foot, which is adequate for a residential building.

Electrical Service Entrance

Electrical power is brought to the building by an overhead 120/240V, single-phase, three-wire service connected to an electric meter on the outside corner of the building on the wall opposite the interior stairs leading to the basement. From the meter, the utility service feeds the 200A main electric distribution panel located on the interior south wall of the stair landing leading to basement.



The main distribution panel feeds the HVAC/Furnace (two pole loads), kitchen, lighting, and receptacle loads. The main distribution panel also supplies a sub-panel located to the right of it. This sub-panel feeds the water sprinkler, dehumidifier, and another sub-panel located in the basement that supplies exterior equipment including a water pump and the bird bath.

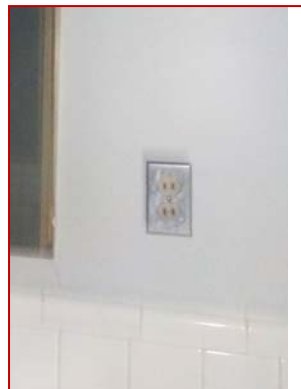
The main distribution panel and sub-panelboards are estimated to be 40 years old. Their useful life is contingent upon maintenance practices and environmental conditions. The main distribution panel contains circuit breakers that are no longer manufactured; therefore, this panel will need to be replaced if a circuit breaker fails, possibly within 5 to 10 years. The sub panel in the basement supplying exterior equipment has visible rust and suspected water damage and should be replaced immediately.

The building wiring is a mixture of types which have been installed at various times in the buildings history. These types include AC cable, conduit, and BX cable. The insulation on the cables, though not tested, does not appear to be damaged. The telephone company entrance box location was not found although several telephone jacks were observed in the space.



Receptacles and Mechanical Equipment Circuits

In general, receptacles are present in sufficient numbers and locations to provide adequate power to the space. The 2017 National Electric Code (NEC) has been released, but not adopted in Virginia where the 2014 code is currently in use. The NEC requires Ground Fault Protection (GFI) in Bathrooms, Garages, Outdoors, Kitchens, Basements, and Laundry areas. The NEC also requires Arc-Fault Circuit Interruption Protection (AFCI) in most other areas in a dwelling unit. Protection can be provided by individual receptacles or be provided on the branch circuit breakers supplying the receptacles. While upgrading is not code required, it is recommended to provide GFI and AFCI circuit breakers in the panelboards that have been recommended for replacement.



The NEC also requires one receptacle per 12 linear feet of wall space, which has not been strictly met in the building. Dedicated kitchen circuits are also now required by the NEC as well as a minimum of two dedicated above-counter receptacles. The above counter receptacles are in place, but the circuiting was not verified.

All receptacles throughout space are non-grounded receptacles that should be replaced. Switched receptacles were found in the basement. Basement convenience receptacles have rust damage.

Floor-mounted receptacles were observed in the glass porch area. On the exterior far left side of the house by a demolished green building, wall-mounted grounded receptacles were observed.

Disconnecting means for mechanical equipment appeared to have been replaced and are in good condition.

Lighting

The NEC requires a switched light fixture in every habitable room, kitchen, and bathroom. In rooms other than the kitchen and bathrooms the requirement can be met with a switched receptacle.

Although not all light fixtures were functional (the cause was not determined) NEC requirements appear to have been met. In general, incandescent wall sconces are used in hallways and bathrooms with overhead light fixtures found in the basement, kitchen, living room, and dining areas. Cove lighting is used in the glass porch area.



Exterior flood lights were noted around the glass porch area, but their operation was not verified due to missing bulbs.

Life Safety

Battery-powered smoke detectors were observed throughout the building; however, they are not located in the proper locations.

Proposed Electrical

- Electrical recommendations are only if the house is structurally repaired, all leaks repaired, and all contaminants throughout remediated.
- Replace (1) 200A (24 pole) panelboards in stair landing with GFI and AFCI circuit breakers.
- Replace (2) sub-panelboards in stair landing and basement with GFI and AFCI circuit breakers
- Replace non-functioning light fixtures
- Replace non-grounded receptacles

- Replace smoke detectors. Fairfax County recommends installing smoke detectors in each sleeping room, outside each sleeping area and in the immediate vicinity of sleeping rooms, and on each story, including the basement. Recommend installing wireless interconnected building-powered smoke detectors with battery back-up in lieu of battery powered only smoke detectors.
- Feeders to HVAC system may be reused if sized correctly for the proposed equipment.
- Provide power for proposed garbage disposal
- Provide power for proposed exhaust fan in bathrooms
- Provide power for proposed dehumidifier in basement

White Gardens

Opinion of Probable Construction Cost

	SWSG Estimate
Division 1 - General Requirements	2,500
Division 2 - Site Work	0
Division 3 - Concrete	0
Division 4 - Masonry	0
Division 5 - Metals	0
Division 6 - Carpentry	0
Division 7 - Thermal & Moisture Protection	0
Division 8 - Doors & Windows	0
Division 9 - Building Finishes	0
Division 10 - Specialties	0
Division 11 - Equipment	0
Division 12 - Furnishings	0
Division 13 - Special Construction	0
Division 14 - Conveying Systems	0
Division 15 - Mechanical	30,400
Division 16 - Electrical	16,175
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Subcontracted Construction Cost	49,075
GC Overhead 10.0%	4,908
GC Profit 10.0%	5,398
Other	0
Other	0
Other	0
Other	0
Contingency 15%	8,907
Estimated Project Cost	\$68,288

Notes:

1. Excludes hazardous material testing and remediation

Budget Estimate

Category/Trade	Qty	Unit	Unit		Subtotals
			Price	Estimated Cost	
Division 1 - General Requirements					
1.01					
	1	LS	500.0	500	
1.02					
	1	LS	1,000.0	1,000	
1.03					
	1	LS	500.0	500	
1.04					
	1	LS	500.0	500	
					2,500
Division 2 - Site Work					
2.01		LS	0.0	0	0
Division 3 - Concrete					
3.01		LS	0.0	0	0
Division 4 - Masonry					
4.01		LS	0.0	0	0
Division 5 - Metals					
5.01		LS	0.0	0	0
Division 6 - Carpentry					
6.01		LS	0.0	0	0
Division 7 - Thermal & Moisture Protection					
7.01		LS	0.0	0	0
Division 8 - Doors & Windows					
8.01		LS	0.0	0	0
Division 9 - Building Finishes					
9.01		LS	0.0	0	0
Division 10 - Specialties					
10.01		LS	0.0	0	0
Division 11 - Equipment					
11.01		LS	0.0	0	0
Division 12 - Furnishings					
12.01		LS	0.0	0	0
Division 13 - Special Construction					
13.01		LS	0.0	0	0
Division 14 - Conveying Systems					
14.01		LS	0.0	0	0
Division 15 - Mechanical					
15.01					
	1	LS	500.0	500	
15.02					
	1	LS	6,500.0	6,500	
15.03					
	1	LS	8,500.0	8,500	
15.04					
	1	LS	350.0	350	
15.05					
	3	EA	350.0	1,050	
15.06					
	1	LS	500.0	500	
15.07					
	1	LS	750.0	750	
15.08					
	1	EA	900.0	900	
15.09					
	1	EA	500.0	500	
15.10					
	1	LS	50.0	50	
15.11					
	1	EA	500.0	500	
15.12					
	1	EA	1,400.0	1,400	
15.13					
	1	LS	750.0	750	
15.14					
	1	EA	350.0	350	
15.15					
	1	EA	400.0	400	
15.16					
	1	EA	700.0	700	
15.17					
	1	EA	750.0	750	
15.18					
	1	LS	1,500.0	1,500	
15.19					
	4	EA	300.0	1,200	
15.20					
	3	EA	600.0	1,800	
15.21					
	4	EA	75.0	300	
15.22					
	1	LS	250.0	250	
15.23					
	8	LS	50.0	400	
15.24					
	1	LS	500.0	500	
					30,400

Division 16 - Electrical					
16.01	Demolition	1	LS	250.0	250
16.02	200A, 120/240V 1-phase panelboard + GFI/AFCI CBs	1	EA	1,200.0	1,200
16.03	60A, 120/240V 1-phase sub-panelboard + GFI/AFCI CBs	1	EA	700.0	700
16.04	60A, 120/240V 1-phase sub-panelboard + GFI/AFCI CBs	1	EA	700.0	700
16.05	Light Fixture Replacement	12	EA	250.0	3,000
16.06	Toilet Room Receptacles GFCI	3	EA	325.0	975
16.07	Replace receptacles w/Grounded type	40	EA	30.0	1,200
16.08	Replace Smoke detectors with AC powered type	9	EA	100.0	900
16.09	Support HVAC replacements	1	LS	2,500.0	2,500
16.10	Add toilet room exhaust, wiring w/ switch	3	EA	300.0	900
16.11	Add power for dehumidifier	1	EA	250.0	250
16.12	Add power for garbage disposal	1	EA	250.0	250
16.13	Dedicated circuits in kitchen	2	EA	500.0	1,000
16.14	Kitchen GFCI receptables	2	EA	50.0	100
16.15	Lamp replacement	15	EA	150.0	2,250
					<u>16,175</u>
Estimated Construction Costs					<u><u>49,075</u></u>